apparatus includes a catheter with a wall section adapted to permit CSF to flow therein , and a sensor located within the catheter such that the CSF is permitted to flow adjacent the tip of the sensor.

Please add the following headings and text after the title:

--STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not applicable.

CROSS REFERENCE TO RELATED APPLICATIONS

Not applicable.

BACKGROUND OF THE INVENTION--

Please add the following heading after the second paragraph on page 1:

--BRIEF SUMMARY OF THE INVENTION--

Please add the following heading after the first paragraph on page 3:

--BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS--

Please add the following heading after the seventh paragraph on page 3:

--DETAILED DESCRIPTION OF THE INVENTION--

In the Claims

Please cancel claims 1-9 without prejudice or disclaimer.

Please add claims 10-40:

--10. (New) A method of monitoring the cerebral cellular environment of a patient for prognosis and for providing information for treatment, comprising:

providing an opening in the skull of said patient;

inserting a catheter through said opening into a region of cerebrospinal fluid (CSF) within said skull of said patient, said catheter having a flow section capable of permitting said CSF to flow therein;

positioning said flow section of said catheter into said region of CSF;

placing a sensor into said flow section within said catheter to enable said CSF to flow adjacent the tip of said sensor so that said sensor may sense at least one characteristic of said CSF; and

monitoring the changes of said characteristic of said CSF.

11. (New) The method of claim 10, whereby said region of CSF is a cerebral ventricle.

12. (New) The method of claim 10, further comprising:

fixing said catheter in place in said opening of said skull to prevent movement of said catheter relative to said opening in said skull.

13. (New) The method of claim 10, whereby said inserting step further comprises:

inserting said catheter into said region of CSF until expression of said CSF indicates said catheter has reached said cerebral ventricle.

14. (New) The method of claim 10, further comprising:

connecting said catheter to an extension tube; and

locking said sensor within said catheter.

15. (New) The method of claim 14, further comprising:

draining said CSF through said catheter; and

monitoring the intracranial pressure.

16. (New) The method of claim 10, whereby said characteristic monitored is selected from the group consisting of pH, partial oxygen pressure, temperature, carbon dioxide concentration, and combinations thereof.

17. (New) The method of claim 16, whereby the pH of said CSF is monitored and compared with a base line.

18. (New) The method of claim 10, further comprising:

monitoring said characteristic on a continuous basis;

storing said data; and

comparing said data.

19. (New) The method of claim 10, whereby said monitoring step comprises:

monitoring said characteristic within the initial 24 hours following trauma.

20. (New) The method of claim 19, whereby said monitoring step comprises:

monitoring said characteristic within the initial 48 hours following trauma.

21. (New) A method of monitoring at least one characteristic of cerebrospinal fluid (CSF) of a patient for prognosis and for providing information for treatment, comprising:

providing an opening in said patient through which a region of CSF is accessible;

inserting a catheter through said opening into said region of CSF in said patient, said catheter having a flow section capable of permitting said CSF to flow therein;

positioning said flow section of said catheter into said region of CSF;

placing a sensor into said flow section within said catheter to enable said CSF to flow adjacent the tip of said sensor so that said sensor may sense at least one characteristic of said CSF; and

monitoring the changes of said characteristic of said CSF.

22. (New) The method of claim 21, further comprising:

fixing said catheter in place in said opening of said patient to prevent movement of said catheter relative to said opening in said patient.

23. (New) The method of claim 21, whereby said inserting step further comprises:

inserting said catheter into said region of CSF until expression of said CSF indicates said catheter has reached said region of CSF.

24. (New) The method of claim 21, further comprising:

connecting said catheter to an extension tube; and

locking said sensor within said catheter.

25. (New) The method of claim 24, further comprising:

draining said CSF through said catheter.

26. (New) The method of claim 21, whereby said characteristic monitored is selected from the group consisting of pH, partial oxygen pressure, temperature, carbon dioxide concentration, and combinations thereof.

27. (New) The method of claim 26, whereby the pH of said CSF is monitored and compared with a base line.

28. (New) The method of claim 21, further comprising:

monitoring said characteristic on a continuous basis;

storing said data; and

comparing said data.

29. (New) The method of claim 21, whereby said monitoring step comprises:

monitoring said characteristic within the initial 24 hours following trauma.

30. (New) The method of claim 29, whereby said monitoring step comprises:

monitoring said characteristic within the initial 48 hours following trauma.

31. (New) An apparatus for monitoring the cerebral cellular environment of a patient, comprising:

a catheter having a wall section adapted to permit cerebrospinal fluid (CSF) to flow therein, said catheter adapted for introduction through an opening in a skull of a patient; and

a sensor located within said catheter such that said CSF is permitted to flow adjacent the tip of said sensor;

whereby said sensor is capable of permitting the monitoring of at least one characteristic of said CSF over time.

32. (New) The apparatus of claim 31, whereby said catheter is a dual lumen catheter comprising a first lumen and a second lumen.

33. (New) The apparatus of claim 32, whereby said sensor is housed in said first lumen and said CSF is withdrawn through said second lumen.

34. (New) The apparatus of claim 31, whereby said characteristic monitored is selected from the group consisting of pH, partial oxygen pressure, temperature, carbon dioxide concentration, and combinations thereof.

35. (New) The apparatus of claim 31, further comprising:

equipment for monitoring, storing, and, comparing data of said characteristic from said sensor over time.

36. (New) An apparatus for monitoring at least one characteristic of cerebrospinal fluid (CSF) of a patient, comprising: